Glossary

The entries in this glossary are adapted from the Earth Observing System Data and Information System Glossary available on the project server, updated most recently on November 2, 1994. The "Source" notations have been carried over to retain the original references:

ECS	EOSDIS Core System (project)
EPO	EOS Project Office
ESAD	Earth Science and Applications Division
ESADS	Earth Science and Applications Data System (project)
ESDIS	Earth Science Data and Information System (project)
IWGDMGC	Interagency Working Group on Data Management for Global Change
SPSO	Science Processing Support Office

AFFILIATED DATA CENTER (ADC) A facility not funded by NASA that processes, archives, and distributes Earth science data useful for Global Change research, with which a working agreement has been negotiated by the EOS Program. The agreement provides for the establishment of the degree of connectivity and interoperability between EOSDIS and the ADC needed to meet the specific data access requirements involved in a manner consistent and compatible with EOSDIS services. Such data-related services to be provided to EOSDIS by the ADC can vary considerably for each specific case. Source: EPO

AFFILIATED USER A user who is sponsored by one of the parties to the Earth Observations ICWG (EO-ICWG) data policy. Each party is responsible for ensuring that all its affiliated users comply with the EO-ICWG data policy. Use of data by affiliated users is classified in one of three categories, defined in the EOICWG data policy. Source: EPO

ALGORITHM 1) Software delivered to the SDPS by a science investigator (PI, TL, or interdisciplinary investigator) to be used as the primary tool in the generation of science products. The term includes executable code, source code, job control scripts, as well as documentation. 2) A prescription for the calculation of a quantity; used in Earth system science to derive physical or biological properties from observations and to facilitate calculation of state variables in models. Source: ECS

ATTITUDE The orientation of the sensor along with information about the accuracy and precision with which this orientation is known. This information is required to perform proper calibration of instrument data. The attitude is usually stored in Euler angle or quaternion form and may be calculated by the on-board computer and telemetered to the ground, or by ground processing facilities (e.g., GSFC Flight Dynamics Facility) using a variety of attitude sensor data.

AUTHORIZED USER A user who has viable EOSDIS accounts and who may therefore make EOSDIS data requests; may be Affiliated or Unaffiliated. See also USER.

BROWSE A representation of a dataset or data granule used to pre-screen data as an aid to selection prior to ordering. Also, a data set, typically of limited size and resolution, created to rapidly provide an understanding of the type and quality of available full resolution data sets. It may also be used to select intervals for further processing or analysis of physical events. For example, a browse image might consist of a reduced resolution version of a single channel from a multi-channel instrument. Note: Full resolution data sets may be browsed. Source: SPSO, ESADS

BROWSE DATA PRODUCT Subsets of a larger data set, other than the directory and guide, generated for the purpose of allowing rapid interrogation (i.e., browse) of the larger data set by a user. For example, the browse product for an image data set with multiple

spectral bands and moderate spatial resolution might consist of an image in two spectral channels, at a degraded spatial resolution. The form of browse data is generally unique for each type of data set, and depends on the nature of the data and the criteria used for data selection within the relevant scientific disciplines. Source: EPO

CALIBRATION DATA The collection of data required to calibrate the instrument science and engineering data, and the spacecraft or platform engineering data. It includes pre-flight calibrator measurements, calibration equation coefficients derived from calibration software routines, and ground truth data that are to be used in the data calibration processing routine. Source: ECS

CO-INVESTIGATOR An individual selected by the PI who typically provides support in preparing the proposal and who has specific responsibilities in the development, operations, or analysis phases of the investigation. Source: ESADS

COMMAND Instruction for action to be carried out by a space-based instrument or spacecraft.

CONFIGURATION The functional and physical characteristics of hardware, firmware, software or a combination thereof as set forth in technical document and achieved in a product.

CONFIGURATION CONTROL The systematic proposal, justification, evaluation, coordination, approval or disapproval of proposed changes, and the implementation of all approved changes in the configuration of a configuration item after formal establishment of its baseline.

CORRELATIVE DATA Scientific data from other sources used in the interpretation or validation of instrument data products, e.g. ground truth data and/or data products of other instruments. These data are not utilized for processing instrument data. Source: ESADS, EPO

DATABASE 1) A collection of data sets with supporting metadata related to a system, project or facility. 2) A collection of integrated data serviced by a data base management system (DBMS); often organized for quick search and retrieval. Source: ESAD

DATA ARCHIVE A facility providing indefinitely long storage, preservation, disposition, and distribution of data sets and associated metadata. Source: ESADS

DATA PRODUCT A collection (one or more) of parameters packaged with asso-ciated ancillary and labeling data. uniformly processed and formatted, typically with uniform temporal and spatial resolution. Often, the collection of data distri-buted by a data center or subsetted by a data center for distribution. Source: SPSO

There are two types of data products:

Standard - A data product produced at a DAAC by a community consensus algorithm. Typically produced for a wide community. May be produced routinely or on-demand. If produced routinely, typically produced over most or all of the available independent variable space. If produced on-demand, produced only on request from users for particular research needs typically over a limited range of independent variable space. Source: SPSO

Special - A data product produced at a Science Computing Facility by a research status algorithm. May migrate to a community consensus algorithm at a latter point. If adequate community interest, may be archived and distributed by a DAAC. Source: ESDIS

DEEP SPACE NETWORK (DSN) The network of NASA ground stations normally used to communicate with deep space probes or high- altitude satellites. The DSN can provide backup communications with low Earth-orbiting satellites. Source: EPO

DETAILED ACTIVITY SCHEDULES The schedule for a spacecraft and instruments which covers up to a 10 day period and is generated/updated daily based on the instrument activity listing for each of the instruments on the respective spacecraft. For a spacecraft and instrument schedule the spacecraft subsystem activity specifications needed for routine spacecraft maintenance and/or for supporting instruments activities are incorporated in the detailed activity schedule.

DIRECTIVES Directives consist of information received by the PGS from the system management center that acts as a final authoritative directive for action. It may include general policies, official procedures, and resolutions of schedule conflicts that have not been resolved with the IMS.

DISTRIBUTED ACTIVE ARCHIVE CENTER (DAAC) An EOSDIS facility that generates, archives, and distributes EOS Standard Data Products, and related information, for the duration of the EOS mission. An EOSDIS DAAC is managed by an institution such as a NASA field center or a university, under terms of an agreement with NASA. Each DAAC contains functional elements for processing data [the Product Generation System (PGS)], for archiving and disseminating data (the DADS), and for user services and information management (elements of the IMS). Other (non-NASA) agencies may share management and funding responsibilities for the active archives under terms of agreements negotiated with NASA. Source: EPO

The EOS DAACs include: ASF (Alaska SAR Facility), EDC (EROS Data Center) GSFC (Goddard Space Flight Center), JPL (Jet Propulsion Laboratory), LaRC (Langley Research Center), MSFC (Marshall Space Flight Center), and NSIDC (National Snow and Ice Data Center).

EXPEDITED DATA Data available for examination within a short time of receipt, where completeness of processing is sacrificed to achieve rapid availability. Source: ESADS

EXPEDITED DATA SET (EDS) Data sets generated by EDOS using raw instrument or spacecraft packets from a single Tracking and Data Relay Satellite System (TDRSS) acquisition session and made available for delivery to a user within one hour of receipt of the last packet in the session. Transmission artifacts are removed, but time ordering and duplicate packet removal are limited to packets received during the TDRSS contact period.

EOS PROGRAM The activity that provides the long-term observations and the supporting information system necessary to develop a comprehensive under-standing of the way the Earth functions as a natural system. The EOS Program Office and the EOS Project are included in the EOS Program. Source: EPO

EOS PROGRAM DIRECTOR The NASA Headquarters official who is the focal point for all Headquarters activities bearing on the EOS Program. Source: EPO

EOS PROGRAM OFFICE The EOS Program Director and his staff. The EOS Program Office is located at NASA Headquarters. Source: EPO

EOS PROGRAM SCIENTIST The NASA Headquarters official assigned to the EOS mission. The roles and responsibilities of this function are defined in NMI 7100.11. One of them is to establish the policies for the analysis, dissem-ination, and archiving of data for the mission. Source: EPO

EOS PROJECT The EOS Project Manager, his staff, and all other participants in the EOS Program who are located at GSFC. Source: EPO

EOS PROJECT MANAGER The GSFC official who has overall responsibility for executing to completion the design, development, test and operation of the EOS Program within a given set of boundary conditions (technical, cost, schedule, and organization approach). The senior individuals in subordinate installations may also be titled Project Managers, but they are responsible to the GSFC Project Manager. Source: EPO

EOS PROJECT SCIENTIST The NASA field center or U.S. academic institution scientist assigned to the EOS mission to manage its scientific aspects. The roles and responsibilities of this function are described in NMI 7100.11. Source: EPO

EPHEMERIS A tabular statement of the spatial coordinates of a celestial body or a spacecraft as a function of time. Source: EPO

EPHEMERIS DATA See ORBIT DATA.

FACILITY INSTRUMENT An instrument defined by NASA as having broad significance to the EOS Program that is provided by a designated NASA center or foreign agency. Source: EPO

FORWARD LINK DATA Instrument control and spacecraft control data. Source: EPO

GRANULE The smallest aggregation of data which is independently managed (i.e.., described, inventoried, retrievable). Granules may be managed as logical granules and/or physical granules. Source: ESADS, EPO

GROUND NETWORK (GN) The network of ground stations that support near-Earth spacecraft primarily in the launch or early mission phase. The Ground Network is the successor to the NASA Satellite Tracking and Data Acquisition Network (STADAN). Source: EPO

HOUSEKEEPING DATA The subset of engineering data required for mission and science operations. These include health and safety, ephemeris, and other required environmental parameters.

IN-SITU DATA Data associated with reference to measurements made at the actual location of the object or material measured, in contrast with remote sensing (i.e., from space). Source: EPO

INSTITUTIONAL FACILITIES OR ELEMENTS Facilities established by an institution that take on some responsibility in support of EOSDIS, or elements of the EOSDIS that function as part of an institution, and represent both EOSDIS and the programs, goals and purpose of the institution. Source: EPO

INSTRUMENT An integrated collection of hardware containing one or more sensors and associated controls designed to produce data on an environment. Source: ESADS.

INSTRUMENT CONTROL CENTER (ICC) An EOS facility dedicated to a specific instrument that plans and schedules instrument operations, generates and validates command sequences, provides the capability to forward commands and to store them for later transmission, monitors the health and safety of the instrument, and provides instrument controllers with status information of their instrument. Source: EPO

INTEGRATED LOGISTICS SUPPORT (ILS) The disciplined, unified, and iterative approach to management, engineering and technical activities necessary to plan and direct support considerations into every aspect of system development and operation. Regardless of organizational assignment or functional allocation, the discipline of ILS is the integration of multiple technical disciplines that address the support aspects of a system. The integration of all system elements is necessary to provide support at minimum life cycle costs.

INTERDISCIPLINARY SCIENTIST An individual selected by the project and/or the peer review process who is responsible for conducting investigations requiring analysis, interpretation, and use of data which crosses instrument and discipline boundaries. Source: ESADS

INTERNATIONAL PARTNERS Signatories of the Space Station MOUs that established the initial funding for the International Polar Platforms program to monitor Global Change, including NASA, ESA, Japan, and Canada. Source: EPO

INVENTORY A uniform set of descriptions of granules from one or more data sets with information required to select and obtain a subset of those granules. Granule descriptions typically include temporal and spatial coverage, data quality indicators, and physical storage information. An inventory may describe physical granules, logical granules, or both, including a mapping between them if they are not identical. Source: IWGDMGC, ESADS, EPO

INVENTORY CHARACTERIZATION Enhanced content-based metadata describing granules or aggregations of granules (phenomenology data bases, super- granules, feature tags, etc.).

INVESTIGATOR An individual who is contracted to conduct a specific scientific investigation. See also PRINCIPAL INVESTIGATOR and SCIENTIST.

INVESTIGATOR WORKING GROUP (IWG) A group made up of the principal investigators and research instrument team leaders associated with the instruments on a single spacecraft. The IWG defines the specific observing programs and data collection priorities for a single spacecraft based on the guidelines from the IWG.

LOGISTICS The science of management, engineering and technical activities concerned with requirements, design and supplying and maintaining resources to support objectives, plans and operations.

LONG-TERM INSTRUMENT PLAN (LTIP) The plan generated by the instrument representative to the spacecraft IWG with instrument-specific information to complement the LTSP. It is generated or updated approximately every six months and covers a period of up to approximately five years.

LONG-TERM MISSION PLAN (LTMP) The plan generated by the FOT that presents an integrated, operationally compatible spacecraft, instrument, EOSDIS, and institutional service plan that supports short-term planning and scheduling..

LONG-TERM SPACECRAFT OPERATIONS PLAN (LTSOP) The plan generated by the FOT that outlines anticipated spacecraft subsystem operations and maintenance, along with forecast orbit maneuvers from the Flight Dynamics Facility, spanning a period of several months. Each LTSOP is consistent with the associated LTIP and with mission specific information provided by the flight project.

LONG-TERM SCIENCE PLAN (LTSP) The plan generated by the spacecraft IWG that establishes guidelines, policy, and priorities for its spacecraft and instruments. The LTSP is generated or updated approximately every six months and covers a period of up to approximately five years.

MAINTENANCE The process of planning and executing life cycle maintenance concepts and requirements necessary to ensure sustained operation of system elements.

METADATA 1) Information about a data set which is provided by the data supplier or the generating algorithm and which provides a description of the content, format, and utility of

the data set. Metadata provide criteria which may be used to select data for a particular scientific investigation. 2) Information describing a data set, including data user guide, descriptions of the data set in directories, and inventories, and any additional information required to define the relationships among these. Source: ESADS, EPO, IWGDMGC.

ORBIT DATA Data that represent spacecraft locations. Orbit (or ephemeris) data include: geodetic latitude, longitude and height above an adopted reference ellipsoid (or distance from the center of mass of the Earth); a corresponding statement about the accuracy of the position and the corresponding time of the position (including the time system); some accuracy requirements may be hundreds of meters while other may be a few centimeters. Source: EPO

OTHER USERS Those persons requesting data for scientific, operational, applications, or commercial use, who are not directly represented by an EO-ICWG member, and who agree to the stipulations on data access and use as set by the EOICWG and the EOS Program.

PATHFINDER DATA SET A long-term, global Earth science data set produced from non-EOS data using community consensus algorithms as part of the EOSDIS Program. Selection of Pathfinder Data Sets is made by the EOS Program Office (in consultation with the IWG and the science community). Source: EPO

PLAYBACK DATA Data that are stored on a spacecraft, platform, or other carrier that are transmitted at a later time. Source: ESADS

PRINCIPAL INVESTIGATOR (PI) 1) An individual who is contracted to conduct a specific scientific investigation. An instrument PI is the person designated by the EOS Program as ultimately responsible for the delivery and performance of standard products derived from an EOS instrument investigation. 2) The individual selected by proposal review, who has primary responsibility for preparing the proposal, selecting the investigation team, carrying out the scientific investigation, and reporting the results. Responsibilities often include supplying an instrument. Source: ESADS, EPO

PRODUCT ORDER Product order is either a request for the generation of a specific product with an associated time window, a priority processing request, a reprocessing request, or a standing order for a product to be generated on a regular basis with a rough timeline, or changes to standing orders. Product orders are received by the PGS from the IMS.

PRODUCTION DATA SET (PDS) Data sets generated by EDOS using raw instrument or spacecraft packets with space-to-ground transmission artifacts removed, in time order, with duplicate data removed, and with quality/accounting (Q/A) metadata appended. Time span, number of packets, or number of orbits encompassed in a single data set are specified by the recipient of the data. These data sets are equivalent to Level 0 data formatted with Q/A metadata. For EOS, the data sets are composed of: instrument science packets, instrument engineering packets, spacecraft housekeeping packets, or onboard ancillary packets with quality and accounting information from each individual packet and the data set itself and with essential formatting information for unambiguous identification and subsequent processing.

REAL-TIME DATA Data that are acquired and transmitted immediately to the ground (as opposed to playback data). Delay is limited to the actual time (propagation delays) required to transmit the data. Source: ESADS, EPO

RECONFIGURATION Any change in operational hardware, software, data bases, or procedures.

RESEARCH FACILITY INSTRUMENT An instrument provided and managed by an institution for use by a group of approved investigators. Data from the instrument may be made available for the operational applications. Source: ESADS

RETURN LINK DATA Spacecraft health and status data and instrument data. Source: EPO

SCIENCE COMPUTING FACILITY (SCF) A facility supplied by the EOS Program to an EOS TL, TM, or PI (Instrument or Interdisciplinary) for the following purposes: developing

and maintaining the algorithms and software used to generate Standard Data Products; quality control of Standard Data Products; in-flight instrument calibration and data set validation; scientific analysis, modeling, and research; generation of Special Data Products; and use as an interface to the investigator's institutional facility. Source: EPO

SCIENTIST An individual having interest in the direct usage or support of the data which is collected and generated by, or the instruments which are contained within the EOSDIS. Included are principal investigators, co-investigators, research facility team leaders and team members, interdisciplinary investigators, instrument investigators, non-EOS affiliated science users, and other users of a diverse nature. See also INVESTIGATOR.

SPACE NETWORK (SN) The NASA assets required to communicate with Earth-orbiting spacecraft via the TDRSS. Source: EPO

SPACECRAFT The spacecraft is the EOS space or orbiting component composed of the payload and mission-unique equipment required to support the EOS mission. It includes propulsion, separation springs, and user interface equipment not unique to the launch vehicle. Source: EPO

SPECIAL DATA PRODUCTS See also DATA PRODUCTS. Products generated as part of a research investigation using EOS data and produced for a limited region or time period, or products that are not accepted as standard by the IWG and NASA Headquarters; they will be generated at research users' computer facilities. See also DATA PRODUCTS.

SUBSETTING Standard subsetting involves extraction of a multi-dimensional rectangular array of pixels from a single data granule, where consecutive pixels are extracted from each array dimension. For each dimension, the size of the pixel array is characterized by the starting pixel location and the number of pixels to extract.

SUPPORT EQUIPMENT All equipment required to support system operation and maintenance. This includes associated multi-use end items, ground handling and maintenance equipment, tools, calibration equipment, communications resources, test equipment and automatic test equipment with diagnostics software for both on-and-off equipment maintenance. It also includes the acquisition of logistics support for the support and test equipment itself.

TARGET OF OPPORTUNITY (TOO) A science event or phenomenon that cannot be fully predicted in advance, thus requiring timely system response or high-priority processing.

TEAM LEADER (TL) The person designated by the EOS Program as ultimately responsible for the delivery and performance of Standard Data Products derived from an EOS Facility Instrument. Source: EPO

TEAM MEMBER A person designated by the EOS Program to develop algorithms for Standard Data Products derived from an EOS Facility Instrument. Source: EPO

TELEMETRY A space-to-ground data stream of measured values (including instrument science data, instrument engineering data, and spacecraft engineering data) that does not include command, tracking, computer memory transfer, audio, or video signals. Source: EPO

TEST A procedure or action taken to determine under real or simulated conditions the capabilities, limitations, characteristics, effectiveness, reliability or suitability of a system or procedure.

TOOLKITS Collections of software and procedures to assist the user in performing computer-based activities relating to the EOS Program. Toolkits will be used, for example, to allow on-line access to DAAC data archives and to facilitate science data processing software development.

TRACKING AND DATA RELAY SATELLITE SYSTEM (TDRSS) A constellation of NASA satellites and ground stations that track and relay data to and from low-altitude, Earth-orbiting satellites (including the Space Shuttle). This NASA system includes specialized communications satellites located in geosynchronous orbit both east and west of the

continental U.S. (providing coverage of virtually the whole globe) and a TDRSS Ground Terminal at White Sands, New Mexico. Beginning in 1995, redundant Ground Terminals are scheduled to be in place at White Sands. Source: EPO

USER Any person accessing the EOSDIS. See also AFFILIATED USER and AUTHORIZED USER.